

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
1 April 2004 (01.04.2004)

PCT

(10) International Publication Number
WO 2004/026843 A1

(51) International Patent Classification⁷: **C07D 243/24**,
409/12, 405/12, 413/12, 403/12, 401/12, A61K 31/5513,
A61P 31/12

(21) International Application Number:
PCT/GB2003/004050

(22) International Filing Date:
22 September 2003 (22.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0221923.6 20 September 2002 (20.09.2002) GB
0302078.1 29 January 2003 (29.01.2003) GB

(71) Applicant (for all designated States except US): **ARROW THERAPEUTICS LIMITED** [GB/GB]; Britannia House, 7 Trinity Street, London SE1 1DA (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CARTER, Malcolm** [GB/GB]; Arrow Therapeutics Limited, Britannia House, 7 Trinity Street, London SE1 1DA (GB). **HENDERSON, Elisa** [GB/GB]; Arrow Therapeutics Limited, Britannia House, 7 Trinity Street, London SE1 1DA (GB). **KELSEY,**

Richard [GB/GB]; Arrow Therapeutics Limited, Britannia House, 7 Trinity Street, London SE1 1DA (GB). **WILSON, Lara** [GB/GB]; Arrow Therapeutics Limited, Britannia House, 7 Trinity Street, London SE1 1DA (GB). **CHAMBERS, Phil** [GB/GB]; Arrow Therapeutics Limited, Britannia House, 7 Trinity Street, London SE1 1DA (GB). **TAYLOR, Debra** [GB/GB]; Arrow Therapeutics Limited, Britannia House, 7 Trinity Street, London SE1 1DA (GB). **TYMS, Stan** [GB/GB]; Arrow Therapeutics Limited, Britannia House, 7 Trinity Street, London SE1 1DA (GB).

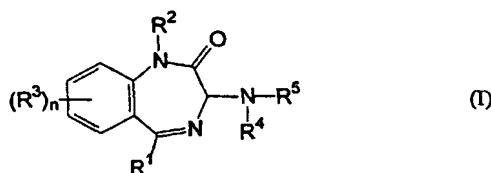
(74) Agents: **SRINIVASAN, Ravi, Chandran et al.**; J.A. Kemp & Co., 14 South Square, Gray's Inn, London WC1R 5JJ (GB).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: **BENZODIAZEPINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM**



(57) Abstract: Benzodiazepine derivative of formula (I), and pharmaceutically acceptable salts thereof, are found to be active against RSV. Formula (I) Wherein: - R¹ represents C₁₋₆ alkyl, aryl or heteroaryl; - R² represents hydrogen or C₁₋₆ alkyl; - each R³ is the same or different and represents halogen, hydroxy, C₁₋₆ alkyl, C₁₋₆ alkoxy, C₁₋₆ alkylthio C₁₋₆ haloalkyl, C₁₋₆ haloalkoxy, amino, mono(C₁₋₆ alkyl)amino, di(C₁₋₆ alkyl)amino, nitro, cyano, -CO₂R', -CONR'R'', -NH-CO-R', -S(O)R', -S(O)₂R', -NH-S(O)₂R', -S(O)NR'R'' or -S(O)₂NR'R'' wherein each R' and R'' is the same or different and represents hydrogen or C₁₋₆ alkyl; - n is from 0 to 3; R⁴ represents hydrogen or C₁₋₆ alkyl; - R⁶ represents C₁₋₆ alkyl, aryl, heteroaryl, carbocyclyl, heterocyclyl, aryl-(C₁₋₆ alkyl)-, heteroaryl-(C₁₋₆ alkyl)-, carbocyclyl-(C₁₋₆ alkyl)-, heterocyclyl-(C₁₋₆ alkyl)-, aryl-C(O)-C(O)-, heteroaryl-C(O)-C(O)-, carbocyclyl-C(O)-C(O)-, heterocyclyl-C(O)-C(O)- or -XR⁶; - X represents -CO-, -S(O)- or -S(O)₂-; and - R⁶ represents C₁₋₆ alkyl, hydroxy, C₁₋₆ alkoxy, C₁₋₆ alkylthio, aryl, heteroaryl, carbocyclyl, heterocyclyl, aryl-(C₁₋₆ alkyl)-, heteroaryl-(C₁₋₆ alkyl)-, carbocyclyl-(C₁₋₆ alkyl)-, heterocyclyl-(C₁₋₆ alkyl)-, aryl-(C₁₋₆hydroxyalkyl)-, heteroaryl-(C₁₋₆ hydroxyalkyl)-, carbocyclyl-(C₁₋₆ hydroxyalkyl)-, heterocyclyl-(C₁₋₆ hydroxyalkyl)-, aryl-(C₁₋₆alkyl)-O-, heteroaryl-(C₁₋₆alkyl)-O-, carbocyclyl-(C₁₋₆ alkyl)-O-, heterocyclyl-(C₁₋₆ alkyl)-O- or -NR'R'' wherein each R' and R'' is the same or different and represents hydrogen, C₁₋₆ alkyl, carbocyclyl, heterocyclyl, aryl, heteroaryl, aryl-(C₁₋₆ alkyl)-, heteroaryl-(C₁₋₆ alkyl)-, carbocyclyl-(C₁₋₆ alkyl)- or heterocyclyl-(C₁₋₆ alkyl)-.